

ELECTROLYTES WITH STRONG OXIDIZING ADDITIVES FOR  
LITHIUM/SULFUR BATTERIES

ABSTRACT OF THE DISCLOSURE

Disclosed are oxidizer-treated lithium electrodes, battery cells containing such  
5 oxidizer-treated lithium electrodes, battery cell electrolytes containing oxidizing  
additives, and methods of treating lithium electrodes with oxidizing agents and battery  
cells containing such oxidizer-treated lithium electrodes. Battery cells containing SO<sub>2</sub>  
as an electrolyte additive in accordance with the present invention exhibit higher  
discharge capacities after cell storage over cells not containing SO<sub>2</sub>. Pre-treating the  
10 lithium electrode with SO<sub>2</sub> gas prior to battery assembly prevented cell polarization.  
Moreover, the SO<sub>2</sub> treatment does not negatively impact sulfur utilization and  
improves the lithium's electrochemical function as the negative electrode in the  
battery cell.